

THE ROMANIAN STRATEGY AND THE NEW TECHNICO-SCIENTIFIC REVOLUTION VALUE ENGINEERING

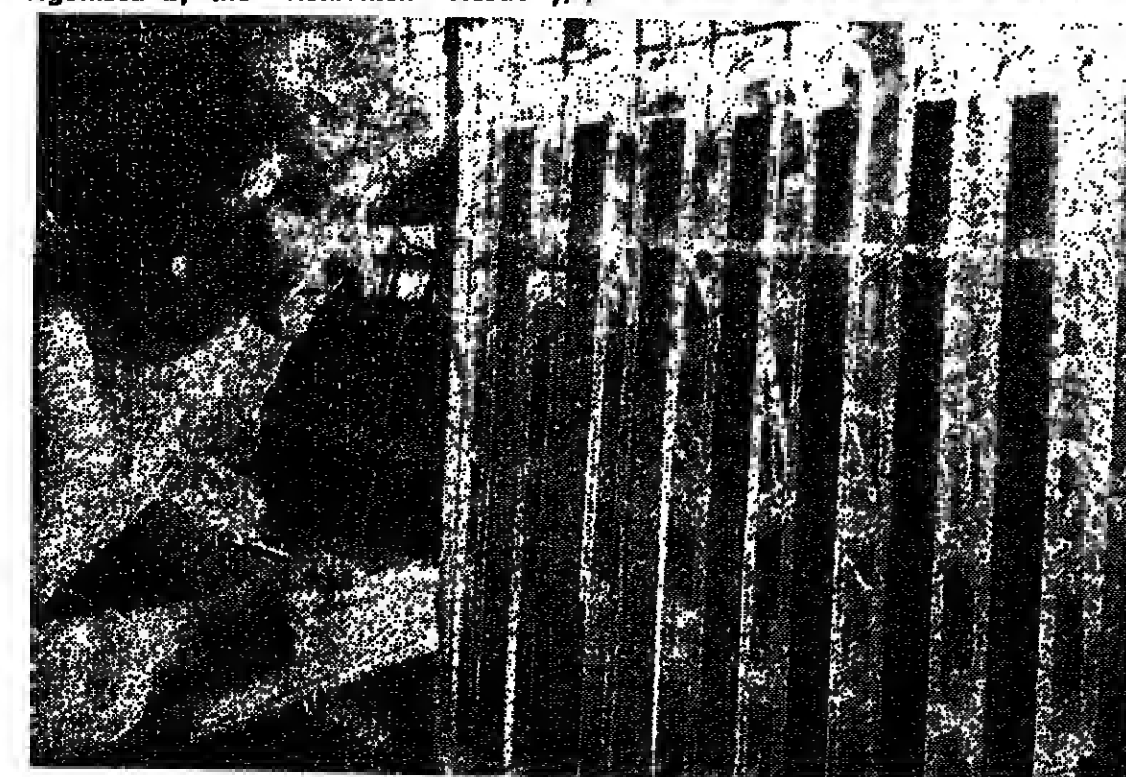
● A DECISIVE OPTION: CREATIVITY LEADS TO SUPERPERFORMANCE ● 2-5 PER CENT OF THE ROMANIAN PRODUCTS WILL RANK AMONG THE FIRST IN THE WORLD UNTIL THE END OF THE DECADE ● FLEXIBILITY AND ANTICIPATION — FUNDAMENTAL CHARACTERISTICS OF THE NEW TECHNICAL HIGHER EDUCATION IN ROMANIA ● THE ENGINEER — A CREATOR OF TECHNOLOGY

Tomorrow's society depends in a large measure on the level of education today, on the way in which we assume the priority questions which will preserve their importance in future too, on the way in which today's pupils and students — tomorrow's specialists — understand development as a broad process to which they must fully commit themselves.

This was a conclusion also reached by a report of the Club of Rome devoted to education-related questions. Its authors (V.B. Botkin, M. Elmondjro and Mircea Molito) insist on the idea of education for creativity. What is undertaken in Romania today to this end? Today, therefore for the future.

To begin with, let us mention an event having taken place this autumn: the third National Symposium on Invention Science organized by the Romanian Academy,

through its Invention Science Commission. The event hosted by Iasi brought together over 120 invention scientists and inventors who set forth the main results of their investigations both regarding creative processes and in the field of the theory and practice of heuristic processes and of the industrial application of the fruit of their researches.



FROM PIONEERING TOWARDS PERFORMANCE

In 1984, in the report of the Thirteenth Congress of the Romanian Communist Party, President Nicolae Ceausescu demonstrated that by 1990 about 85 per cent of the Romanian products should be, from a technical and qualitative level, on a par with those existing at a world level, and at least 2-5 per cent of them should outclass the latter.

What has been done in order to meet these parameters of technological and scientific competitiveness? In Romania, the starting point was first of all the revision of the concept of expert training in the conditions of an unprecedented dynamics of technical and scientific progress in the world. From this perspective, the transformation of the engineer from a conservative, imitative technician into a creator of technology, into a specialist, became a task of the utmost importance. In which the fundamental role of the higher education, particularly in the fields of

here are two fundamental characteristics of the Romanian technical higher education will-hold which one can no longer conceive the training of experts. Pursuing these goals, the Polytechnic Institute in Iasi opened three years ago the official course of lectures "The Bases of Technical Creation and of Industrial Protection" delivered by Vitalie Belous, D.Sc., from the Mechanics Faculty.

The beginning, although not very remote, does have its importance. It means the setting up of the first school of invention science. Here, students assisted by their professors and by an auxiliary personnel examining the legislation of inventions, the technique of drafting and describing inventions, creation methods and techniques, engineering analysis and synthesis.

The results of this undertaking have been quite spectacular. Suffice it to mention that of the overall number of inventions registered in last country, nearly half were authored by members of the Polytechnic Institute. As part of this achievement, the front place is taken by the Mechanical Faculty — the Mechanical Faculty Department that is, by the "birthplace" of the invention science.



INVENTION TECHNOLOGY

Let us now try to take invention technology "to pieces", with the help of its authors.

A first package of concerns is that of a university nature. It has been decided that as early as their first years of higher studies, students should cover the entire array of engineering activities, from the design to the execution in the faculty's pilot workshops of original products, patented by the teaching staff and by senior students.

Could all students, even the

mediocre ones, become inventors? Would not the level of product research and design drop? These questions were answered by the father of the last invention science professor Vitalie Belous, who said that: "If an effort, quantity becanan this alone ran, at a given moment, supply the expected quality, the value leap. Out of 100 commonplace inventions, five are sure to have real value."

Professor Vitalie Belous is aware that the road opened for conquering the redoubt called quality and value engineering will come against numerous obstacles.

"The educational system, on all its steps, from kindergarten to faculty, cultivates convergent thinking, which is hardly adequate for spontaneous or stimulated technical creation. The latter is largely the fruit of divergent combinatorial thinking, of efficient collaboration between the conscious and the unconscious."

Then how can the specialized course of lectures become an open scientific system for accumulating and spreading new information and spurring the youths' creativity? In other words, how can students think in a raw, unpolished way upon already formed patterns and values?

The professor's answer analyzed the long teaching experience and professional capability of the specialist to whom the supreme reason of being is creation.

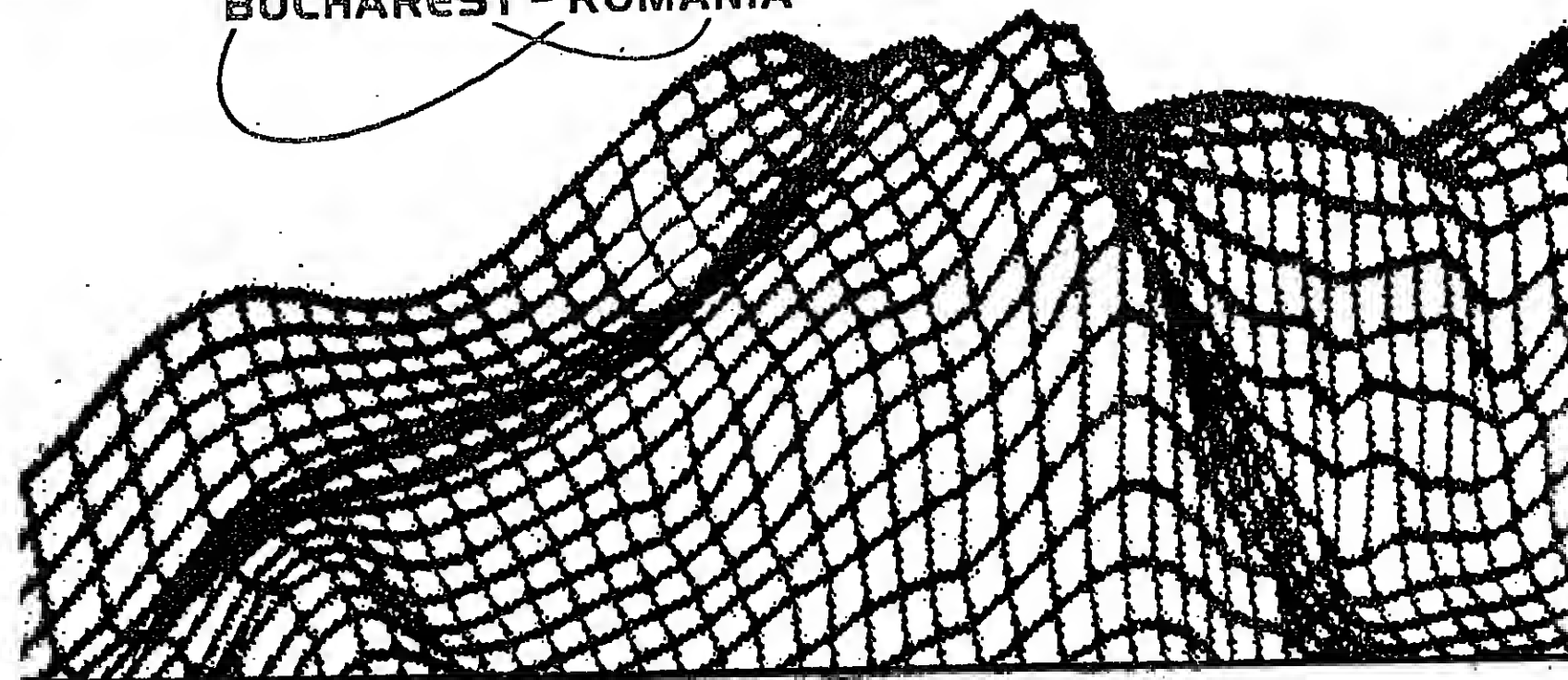
The specialized chapters must be enriched by open diagrams of ideas, morphological moulds or generalised objects and associated with the assessment of the current stage of technology in the respective field and the sketching of its future development. The professor must always formulate the theme of creation for the future engineer; lead them along the winding roads of value engineering; of the skill of creating a maximum of functional possibilities with a minimum of resources; an essential objective for any technical creation.

The experience gathered so far by the last department has proved that any specialist, technical and scientific nature can be awakened by progressively pursuing a new way technological and creation flow. This technological flow shortens and saves the

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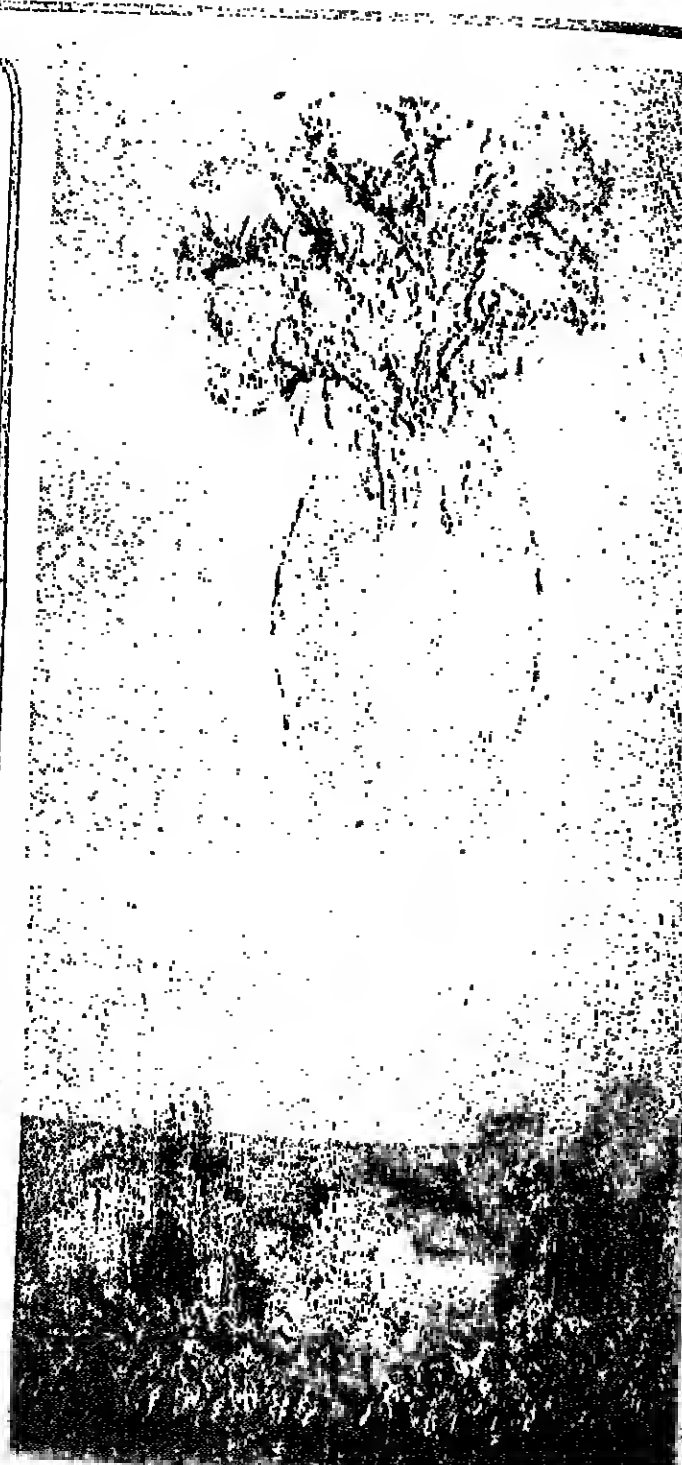
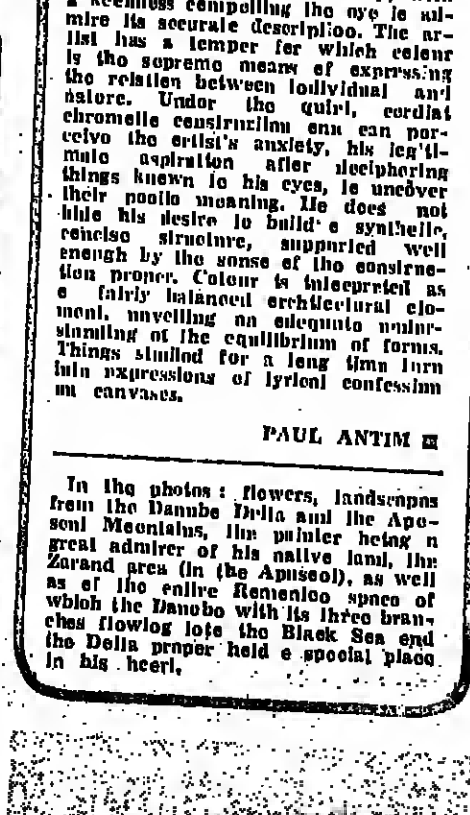
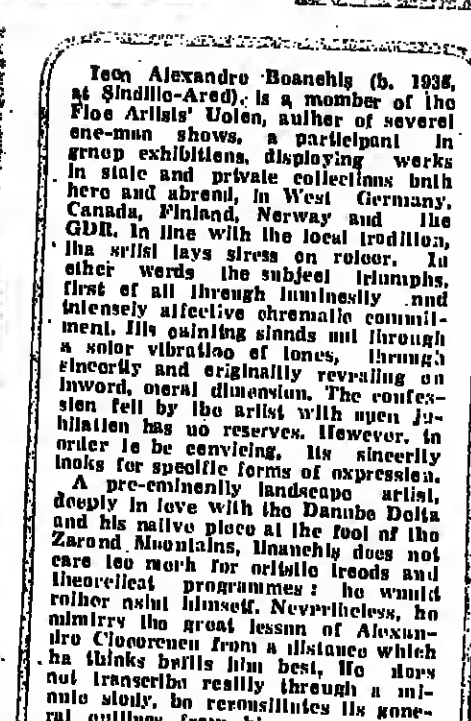
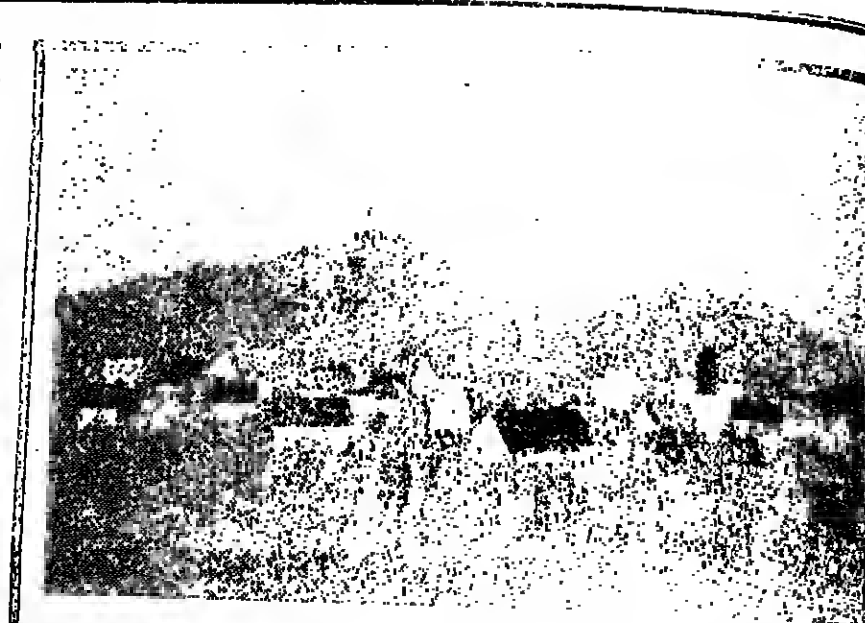
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PAUL ANTIM F

In the photos: flowers, landscapes from the Danube Delta and the Apollonia Monastery, the painter being a great admirer of his native land, the Zaretska area (in the Apollonia), as well as of the entire Romanian space of which the Danube with its three branches flows into the Black Sea and the Delta proper held a special place in his heart.

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LA MULTI ANI 1989!

Thursday, December 29 right before the new year, thousands of children and youths come to the headquarters of the Central Committee of the RCP in order to pay the homage of the country's young generation and to address the traditional "A Happy New Year" wish to the General Secretary of the Romanian Communists Party, Nicolae Ceausescu, President of the Socialist Republic of Romania, and to Elena Ceausescu.

Participating in the "Plug-
sor" celebration were full and
alternate members of the Ex-
ecutive Political Committee of
the CC of the UCP, secretaries
of the Party Central Committee,
representatives of the leader-
ship of the student and youth
pioneers' organizations as well
as people working in enter-
prises and institutions in the
Romanian capital.

After the celebrations which proceeded according to a long soft tradition, groups of well-wishers in exorbitant silk attire specified all the zany of the country joined President Nicolae Ceausescu, Kiril Ceausescu and the other members of the party and state leadership, to wish them well in the "soregav" tradition.

To the applause of the audience, President Nicola Ceausescu took the floor.

The young well wishers were then invited into the head quarters of the Central Committee, where they were offered new year's presents.



new year's presents.

NICOLAE CEAUSESCU'S ADDRESS

In an address made on December 20 on receiving the presidential award of the Romanian children and youth, who were in the big square in front of the CC of the MCP headquarters in order to extend to him his new year's wishes, according to party tradition, President Nicolae Ceausescu showed the Romanian people and the year 1988 with important results to all denials of activity.

Everything we have achieved this year as well — just as much, all along the period of...

ocialist copstruction, the speaker said, is the result of the policy of our communist party. It demonstrates the correctness of the policy and practical activity of the party that applies the general principles of socialism to socialism, the general laws of human society's development to the country's realities, and demonstrates our party's force.

Nothing that the year 1988 was
a year of deep-going change
to international life, in the
world balance of forces and

assessing that certain steps were taken, a beginning to the negated settlement of trying on pills and - issues, the - Remanjan head of state declared. We must say it openly that in general the expectations of our people, of all peoples of the world were not accomplished to the full, the international situation is still rather complex and grave. And the danger of a world war that would inevitably turn out to be a civil war, the disarmament has to be achieved, nuclear disarmament.

ment above all, and a world free of weapons and wars must be built, the speaker stressed. "Romania - our people, President Nicolae Ceausescu, pledged, will do their utmost in order to contribute to the accomplishment of these aspirations of the whole of mankind for a united Europe, in full freedom, of free and independent nations, a Europe free of weapons, a Europe of peace and work, for collaboration in the Balkans, for the attainment of

the world's complex issues only by negotiations. We wish and will do our utmost for the year, 1959, to bring concrete achievements on the path to peace, collaboration, economic and social progress, the speaker showed, stressing the imperative requirement of a real passage to a new thinking and a new economic policy, to a new policy to international life, to a resolute end to the policy of strength and distrust, of interference in other states' affairs.

• IN BUILDING THE SOCIALIST SOCIETY THERE ARE NO "MODELS" OR "PATTERNS" • THE MODERNIZATION OF LOCALITIES IS A PROGRESS MEAN TO ENSURE DIGNIFIED LIVING CONDITIONS • ROMANIA IS A UNITARY NATIONAL STATE ENSURING FULL EQUALITY OF RIGHTS TO ALL CITIZENS • THE EFFECTS OF THE WORLD ECONOMIC CRISIS DID NOT HINDER THE CARRYING OUT OF THE COUNTRY'S DEVELOPMENT PROGRAMMES • ROMANIA WANTS A UNITED EUROPE OF INDEPENDENT AND FREE NATIONS

We celebrate 41 years since the proclamation of the Republic in Romania, on December 30, 1947. The Romanian people's dream was accomplished: that of being the only master of its fate, of living free and dignified in a free and dignified country, independent and sovereign. The years which followed were years of hard work for the entire people. On the path on which the nation had embarked on December 30, 1947, the Ninth RCP Congress of 1968 opened a new page of history by electing Nicolae Ceaușescu to the head of the party, the head of the state, the most influential in the Romanian millenary existence, the age of building a new Romania is twinned to his name. (see page 2)

A high-contrast, black and white photograph of a large, complex industrial structure, possibly a bridge or a large building under construction, viewed from a low angle looking up. The structure is heavily shadowed, with bright highlights on the upper sections and deep blacks in the lower sections, creating a dramatic, almost abstract effect.

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LA MULTI ANI 1999!

"La multi ani!" (Happy New Year) remains a syntagm which cannot be translated. At the table placed at the centre of the New Year's Eve celebration, the night of the passage from one period of time, full of accomplishments and joys to another one which should be richer and better, "la multi ani" translates the wish that all those who are seated around it should meet on the occasion of many other such celebrations. "La multi ani" wants to say, in this special context, a long, happy, rich life, with many fulfillments. The traditional New Year's Eve celebration probably has its equivalents on all meridians. In the whole world, people, under the sign of hope, wish that the coming year be a happy one. The wish coming from Romania, addressed to all our readers, is that this thought be translated into many years of peace, understanding, satisfaction and joy.

Folklorists include the who richens by the traditional Romanian customs concerning the New Year in the category of "passage ceremonies." Should we follow them in this very interesting view with a little very arid quail? Maybe some other time.

Undoubtedly we are speaking about the still vivid forms of old customs, but the sense of feeling of changing a state of being, of creating a threshold, the feeling of the passage into the new was probably born at the same time with man's oldest consciousness. It remains of fundamental feeling despite the deep changes undergone by the individual structures of modern man. We can say it is strengthened by the frustration imposed by the tyranny of the accelerated and repeated changes in his life in the lap of the modern man. No wonder that maybe, modern man meets the ancestral thrill on the threshold of change more easily than we do. The sense of measure of time, the feeling of the endless, is identified with its absolute measure, the great time cycle of life, multivocally and univocally, in the joyful or somberly passing time.

The explanation of the rich past and the modern man is

olive in most Romanizing villages, and concerning the New Year's Eve and the last night should be looked for here, And of least some of them, thoroughly included in the spiritual life of another type of the urban community before the change to be perfectly adopt to the new environment and give one and for all the specific colour. The meaning of the New Year's Eve in Romania, especially in the village tendency, is to give an obvious tendency of standardizing the most interclassical celebration.

It is natural that the symbols of these customs should be extremely old elements. The richness is expressed, to a metaphorical extent, belonging to illness and stinking, in those of which the bread is made of oysters, rivers or milk, trees of linden. The children who believe, at the age of innocence, that milk is made from powder, make the wish to grow up as a very best with today their persons and relatives, electric light, sailors, doctors, information, scientific, police, programme, and the wish to have a plentiful rain of linden and trees full of fruit.

That which once represented and designated in the previous meaning of the term, still exists

THE "PLUGUSOR"

The "plugușor" (little plough) is another specific custom which goes on across and wide the Romanian territory, under various local versions. Traditionally, the "plugușor" was performed only by groups of youngsters or even groups, but now, this custom has been taken up by groups of children, in all parts of the country.

On New Year's Eve, a plough would be beautifully decorated and the best looking oxen would be harnessed to it. In most of the occasions, a fir-tree would be attached to the plough, on which many red and green woolen balls and flowered decorations would hang. The wights would stop with the plough in each yard, and the head of the groan would salute a ballad — a wishing, telling of a legendary character, Brother Trajan, embodying all the qualities of a good householder, who for this very reason, benefitted by abundance and sublime accomplishments. The wights would simulate wheat sowing, and the wishing would also stand for an incantation for the fertility of the soil.

To many places, the decorated plinths no longer appears. The "plintusor" has remained a ballad-wisling, preserving the original text. But the walls carry vultures and ewe bells, used in a masterly way, whose specillo soundo accompany the "chorus" of the ballad. And there are still numerous places, towns included, where walls carry an old decorated plinthe.



rotas with wheat grain, simulating sowing, with green wheat sown in spool-pots and springing in the light of the apartment building's loggia, with the first lambs brought from the neighbouring villages. The incantation remains today in the children's excitement in the eve of holidays, the groups of wattle along their simple lamas in front of lighted windows, the coloured costumes, the white masks.

walls' manaka.

Because the main role held by children in all New Year's Eve celebrations comes from the fact that they are still growing and must be spoiled. And from this point of view we must remain close to the territory of fundamental logic. Indeed, who else could better carry the new year around on the obscene shoulders of children? Obviously, if today in Bucharest—or in any other Romanian town—a folk costume is not a simple outfit, it is not because the New Year must be made wearing such a costume. In fact, the feeling of the show is closely connected to the costume characteristic of celebration and the show wings.

Bui, beyond this show we can perceive their conscious attachment to tradition. No doubt, these children are aware that they reproduce something that once was performed by their parents, grandparents and ancestors. As a matter of fact the children's preparation for the celebration is a task to be accomplished exclusively by themselves. Maybe it is one of the first attempts to integrate oneself in the collective memory and to be inspired called what



lor). Anyway, even the most colorful and minute description could hardly illustrate the closuresquariness of these costumes. The masks of the wights of Moldavia and the garb should be seen on the spot. The same goes for buhel, herapicni, bici, biza, inlonda, the waste of imagination, the variety of the folk noise-making instruments. Because, as is known, the wails must make their presence heard from afar. And that would be an odd sight to see the wailing year and welcome the new one without the internal outbreak of odd sounds caused by the harsh breathing instruments, viciously hamstrung by a group of di-dad-dad kids. You must see the incredible spots of color, the grotesque, the variety in the national costumes of the wails. The unique costumes of, again, Moramurezi and Vrancea, the costumes of Suceava and Gogolin, the costumes of the wails of the region of Sibiu and Giurgiu.

or another, memories of their childhood referring to this custom. And you should also see the children in order to understand why the custom has come to be. The custom of having to housto to elog Christmas carols is one of the greatest joys of one's childhood. With their cheeks all red, they are not to forget the newly-acquired aerost, careful about every gesture and word of the wishing, marked by the importance of the occasion. The mistle of actually heralding the celebration, oxxellod about their uncommon encounter with the grown-ups, the excitement of the presents. Because the walls are rewarded for their effort. When the enthusiasm was still in bud, the reward was not yet given. That cakes, nuts and apples. Almost everywhere nuts and apples are still offered as presents to the small wonderers. In certain places people give them cracknels. Now, the reward is given in the form of chocolate and oranges. Anyway, unexpected gifts enhance the joy of the custom.

Almost all the Romantic writers have evoked, one way

At the time when this issue of our weekly is released hundreds of thousands of children in Romania wander from house to house, from apartment to apartment with plugușorul, sorcevo and with carols, doing their duty of heralds of a better and hoppiier New Year full of joy. Hundreds of thousands of grandparents, of uncles, aunts, of known and unknown people open their front doors and listen to children's wishes and carols which they have known for a long time, since their own childhood and even earlier. A New Year has come. It must bring everyone more happiness, more accomplishments, joy and peace. The photos published on these pages are meant to bring in your houses, too, dear readers, the heralds of the tidings which are as old as the world and as new as every new year. We want them to find you, as the Romanian wish goes, in good health and as strong as steel, blossoming like the apple and pear trees, happy, brightened up by all joys, in peace and harmony. And naturally, we wish you to live many, very many years, always rejoicing in accomplishments and successes, and above all, peace and good health.



Practically it would be impossible for us to survey the extremely varied forms acquired by the custom of wishing on New Year's Eve, depending on the local traditions. It would be difficult for us even to describe the patterns which have been somewhat generalized throughout the national territory.

THE "SORCOVA"

Next to the "pluguor", the "sorcova" is one of the most widely spread customs related to New Year's celebration. Children only, carry the sorcova. What does "sorcova" mean? In the beginning it was just a mere apple or pear-tree twig, symbolizing the fruitfulness of hard, orchards and fields.

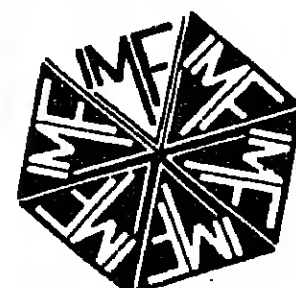
Today, the "soroova" is made of a wooden stick, suggesting a branchy twig. The flowers, decorating it are artificial flowers, big and vividly coloured. Frank and good-looking, all compulsory decorations of the "soroova" are some broad, Most often, one can buy ready-made "soroova" nowadays.

But there are still a lot of places where real competitors of creativity are questioned by the "soroova", in which real masters of this art defend their well-known reputations.

The wall shakes the "soroova", gently and repeatedly, reminding the one, the wishing is spoken to, reminding the traditional farming "May you live and blossom like apple trees like you-ages in the midst of summer, as strong as the stems as swift as an arrow". etc.



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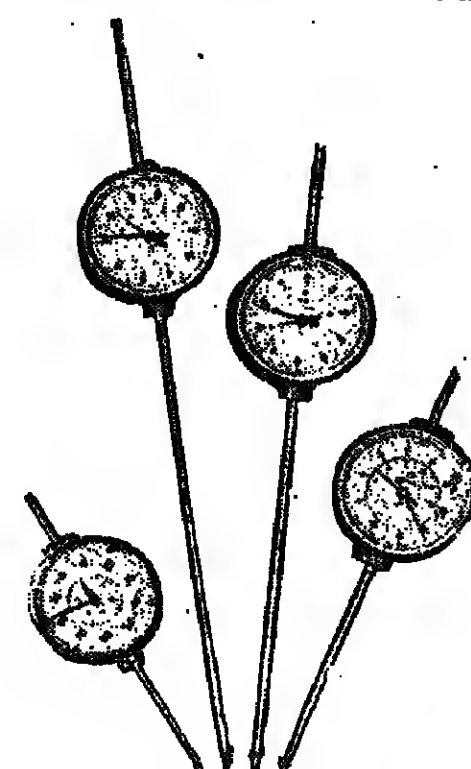
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● dial gauges ● bore dial gauges ● gear measuring instruments ● threaded conic gauges for the oil industry.

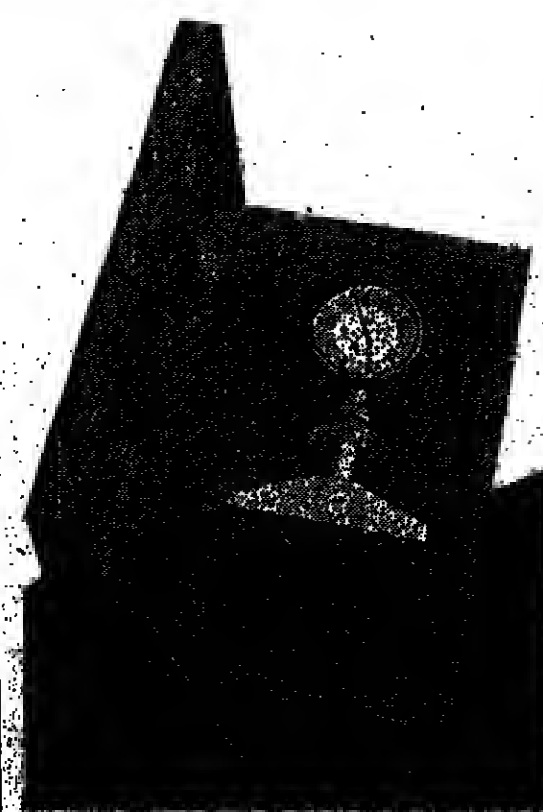
● circular dial snap gauges ● gear pitch-error and gear-tooth-thickness measuring instruments ● reading ball-gauges; optical read-out devices and rules.



IN- AND POST-PROCESS SIZING GAUGES

● They are built according to modern principles, with pneumatic inductive, piezoelectric transducers, whose signals are processed and displayed analogically or numerically in modular-type electronic units:

● pneumatic post-process sizing gauge — SUPERJET ● pneumatic post-process sizing gauge — ELSUPERJET ● post-process sizing gauge with electric contacts ● inductive electronic post-process sizing gauge ● roughness measuring post-process sizing gauge; smoothness measuring gauge (electronic levels) ● in-process sizing gauge for continuous exterior cylinder surfaces with one and two measuring points ● for continuous exterior surfaces and for continuous interior cylinder surfaces with two measuring points ● in-process sizing gauge for continuous grinding machines ● in-process sizing gauge for exterior diameters of narrow surfaces ● copying systems mounted on machine tools for processing through copying after a pattern.



AUTOMATION ELEMENTS AND MECHANISMS

● Programmers ● electromechanical impulse counters ● programme control for automatic washing machines ● discharge counters with oval wheels ● electromechanical tachographs for motor vehicles ● complex speed measuring installations for locomotives and subways.

FOR PRESSURE INDUSTRIAL CLOCK-TYPE APPARATUS, INSTALLATIONS AND TEMPERATURE CONTROL

This apparatus family includes pressure switches and thermostats. They are indispensable in the automation of starting and stopping installations using fluids, whose temperature and pressure must be maintained within certain preadjusted limits. Pressure switches and thermostats are made by the Fine Mechanics Enterprise in a wide variety according to the pressure and types of media they are mounted on, and the conditions of the environment.

REMEMBER THE IMF TRADEMARK



SINTER-CARBIDE METAL PRODUCTS

The main groups of products bearing the "CARME-SIN" mark — which are the object of the Bucharest Fine Mechanics Enterprise's production programme — are the following: sinter-carbide metal brazable tips and inserts for metal cutting; sinter-carbide metal inserts for mining tools; sinter-carbide metal inserts specific to the wood industry, building materials and extraction industry; products for drilling installations; dies for screws and nuts; dies for roll bearings; other types of products upon the foreign partners' demand.

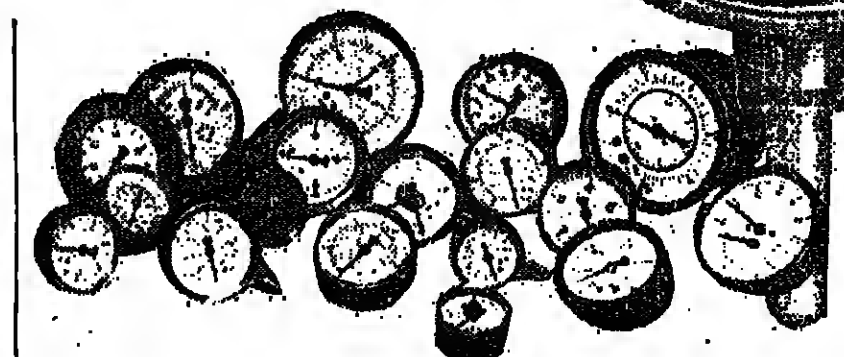
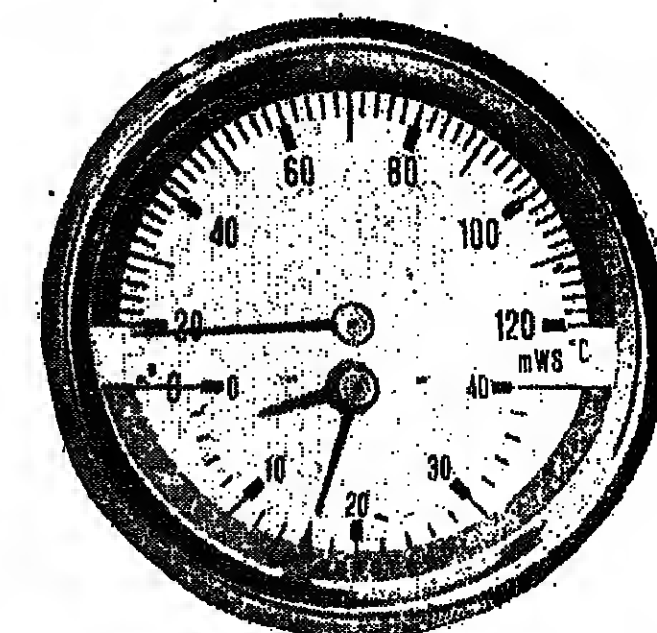
According to the concrete destination indicated by the end user, these products are executed out of the PKMG groups of carbide metal powder, after ISO international standards or according to other requirements specified in the order.

In order to increase the durability and performances of the sinter-carbide metal inserts, the method is applied of coating them with extra-hard layers of titanium carbide, giving the inserts an increased durability of up to 300 percent, as compared to the normal execution.



PRESSURE GAUGES

Through the great diversity resulting from constructive variants based on measuring limits, accuracy, diometer, connection and scale type, the Fine Mechanics Enterprise can satisfy the most exigent demands of its clients (standard pressure gauges or of special construction, upon demand). There are: ● general use industrial manometers ● vibration-proof manometers ● corrosion-proof manometers ● capsule-manometers ● double indication manometers ● manometers-thermometers.



DIAMOND TOOLS

The processing of ferrous and non-ferrous metals, of sinter-carbide metal, stone, concrete, ceramic and glass — through modern methods — calls for the use of diamond tools on an ever larger scale.

The manufacturing programme of this kind of tools is achieved at IMF on the basis of the licence purchased from WINTER firm of West Germany and is currently in full swing as a result of the growing demand. It comprises the following more important groups:

— diamond mills with metallic or resin-

ous binder of various shapes and sizes, with cubic boron nitride.

— diamond tools for construction-material processing
— diamond tools with galvanic binder
— honing diamond blades
— diamond pastes
— diamond tools for trimming and shaping abrasive stones
— chambering tools with extra-hard materials from diamond polycrystals or cubic boron nitride
— diamond drawing dies.

AND THE EXACT TIME

WHICH YOU CAN LEARN AT ANY MOMENT BY LOOKING AT THE DIAL OF THE WATCH WHOSE TRADEMARK OREX IS A GUARANTEE OF ACCURACY. BUILT IN SEVERAL HUNDRED MODELS BY IMF, THE WATCHES — MECHANIC OR QUARTZ-BASED ANALOG — MEET THE FINENESS OF YOUR AESTHETIC TASTE AND GIVE YOU THE EXACT TIME.



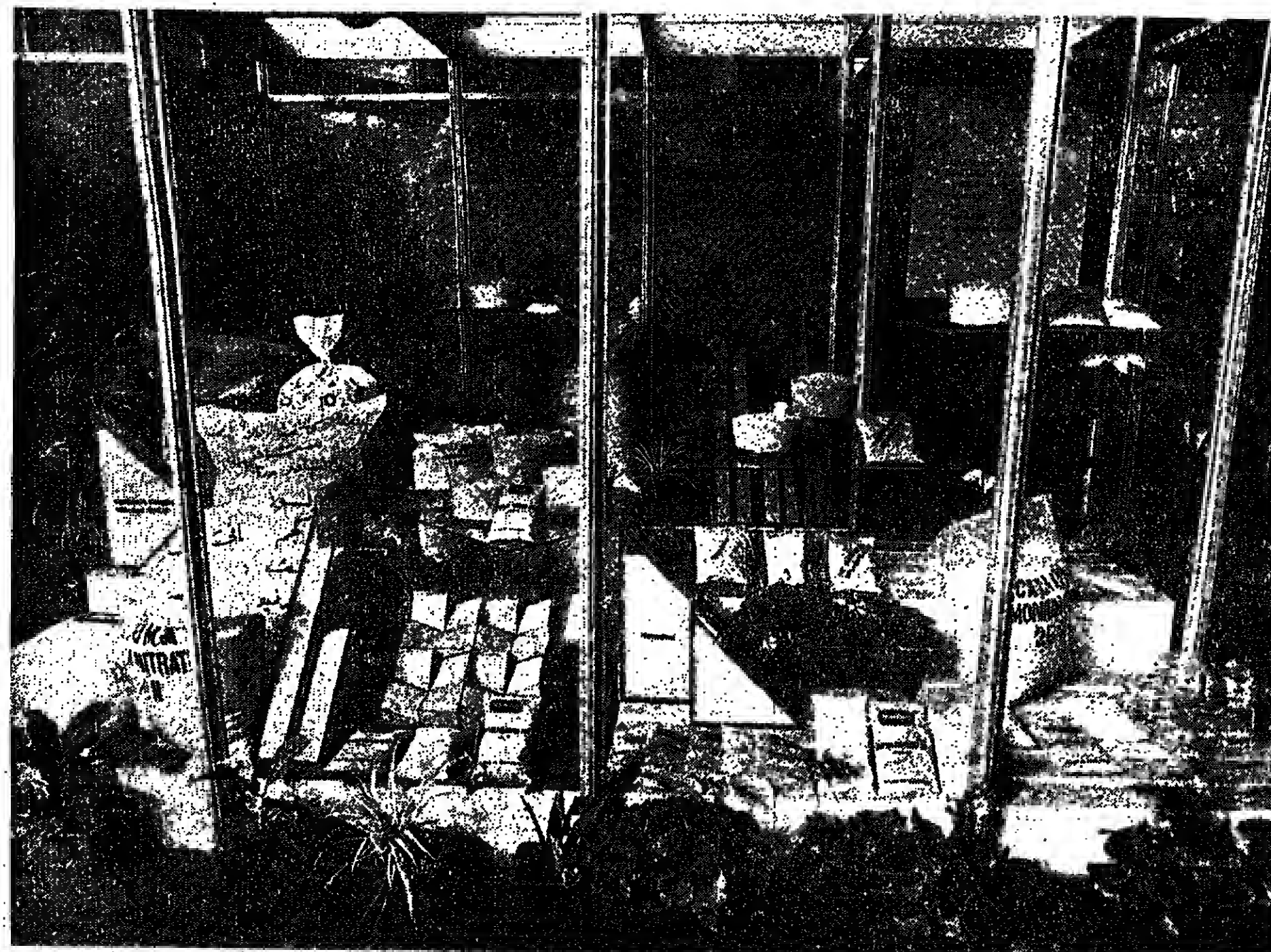
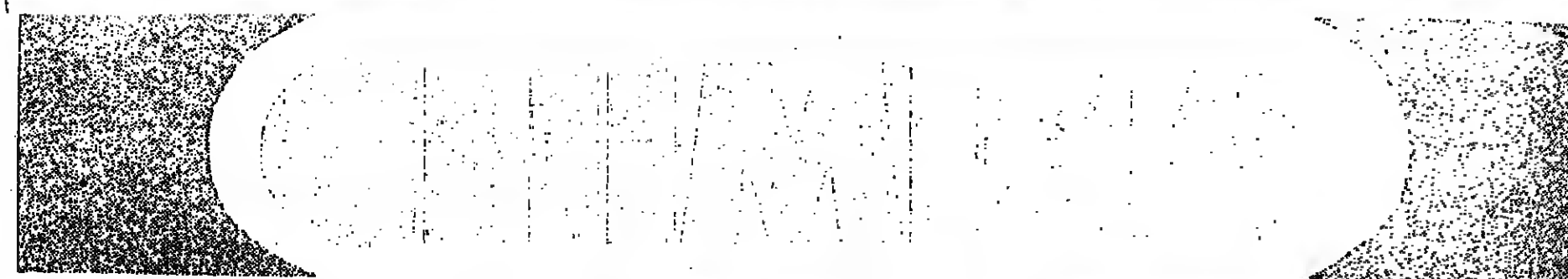
MANUFACTURER:
THE FINE MECHANICS ENTERPRISE

ROMANIA ● BUCHAREST ● 9-19 POPA LAZAR ST.
PHONE 350000 / 290 ● TELEX: 11588

EXPORTER:



electroexportimport
ROMANIA ● BUCHAREST 216 VICTORIEI AVE.
PHONE: 502870 ● TELEX: 11388



CHIMICA IN THE WORLD

ICE Chimica's export list covers over 170 groups of products.

This wide range of chemical products are marketed through economic relations with more than 100 commercial firms in 71 countries.

The products exported by ICE Chimica are remarkable by their competitiveness, high quality and continuity in the foreign markets. ICE Chimica, which is one of the world's top exporters of fertilizers and holds an important place in the exports of medicines, cosmetics, varnishes and dyes, paper, cardboard and items made of them, has become a familiar presence in international trade.

Among the products which are in great demand in the foreign markets we are mentioning: nitrogenous

fertilizer, complex fertilizer (nitrogenous, phosphatic, potassic), writing, printing and newsprint paper, wrapping paper, various paper and cardboard items, original and traditional drugs, cosmetics, varnishes and dyes, dyestuffs and other products.

ICE Chimica is a partner of three joint trade companies: AMROCHEM - USA, ROMITAL - Italy, CONICHEMIE - West Germany, which also contribute to the marketing of the enterprise's products.

Moreover, our enterprise offers merchandise to other joint companies with Romanian membership such as ARCODE - England, DECOFRA - France, VICTORIA-REIFEN - West Germany, TERHELLAS - Greece, SOMAROMIMPEX - Morocco.

For additional information please apply to:



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ELECTRONUM YOUR SAFEST BUSINESS PARTNER

Marketing Romanian electronic products and services as well as economic cooperation in the field of the electronic industry are carried out by the ELECTRONUM foreign trade enterprise.

ICE ELECTRONUM'S export programme includes the following lines of products:

— Telecommunication apparatuses and equipment, servicing included, starting from design up to training and maintenance. From this line of products mention should be made of: telephones, urban, interurban, international and institutional automated telephone exchanges. Exports of such products to Greece, the USSR, Czechoslovakia and the GDR have become a traditional practice.

— Measuring and control apparatuses, of which ampermetres, voltmeters, wattmeters, electric metres, flow-metres, steam-flow metres, logameters are delivered to Poland, Syria, Iraq, Pakistan, Sudan, the GDR and Czechoslovakia.

— Automation elements, equipment and installations for all the economic and social sectors.

We shall enumerate some subgroups of products: field and panel automation equipment, distribution and control electrical equipment, automated equipment and systems controlling technological processes in all economic branches, transmission and data processing equip-

ment, teletransmission and data processing equipment, machine tools, control equipment, automated testing equipment.

Also an offer are personal installations and equipment as well as turn-key deliveries. Increasing are the deliveries to countries such as the USSR, Egypt, the GDR, Czechoslovakia, Iran, Iraq, Bulgaria.

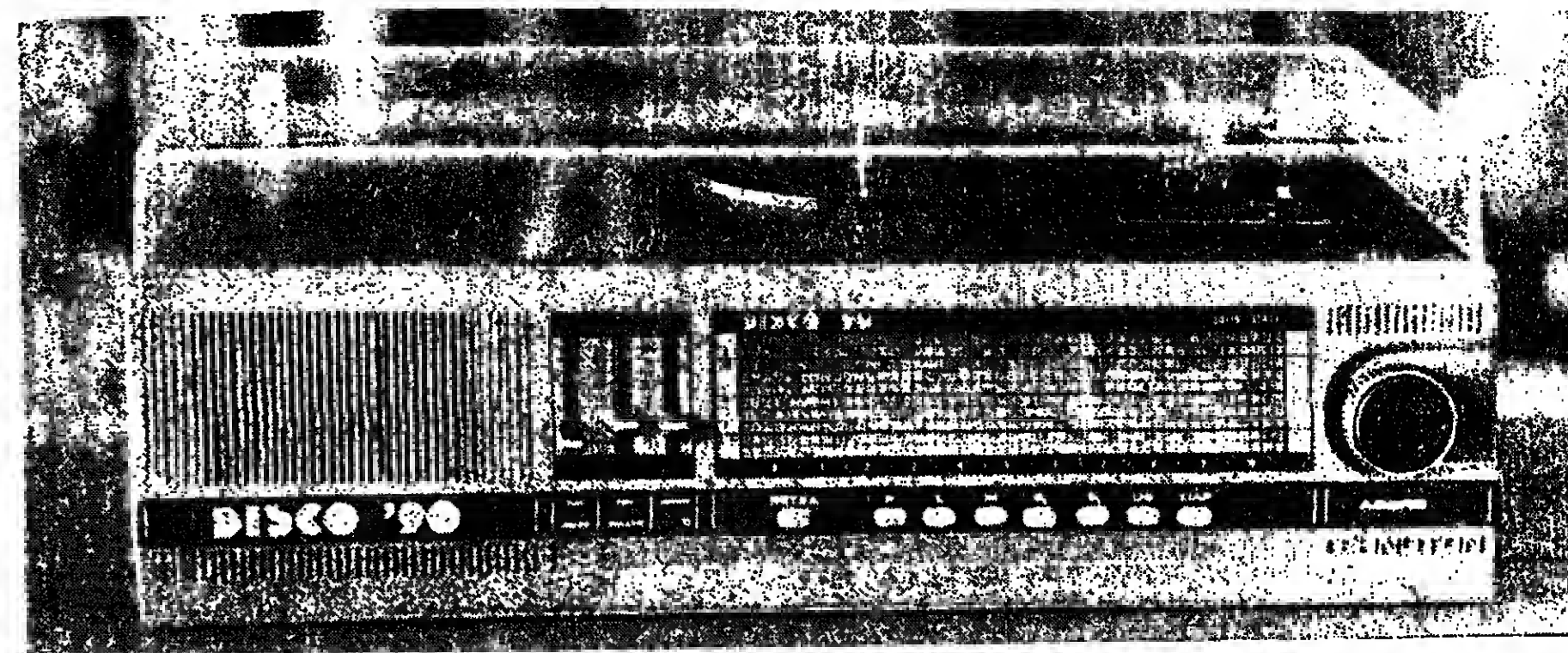
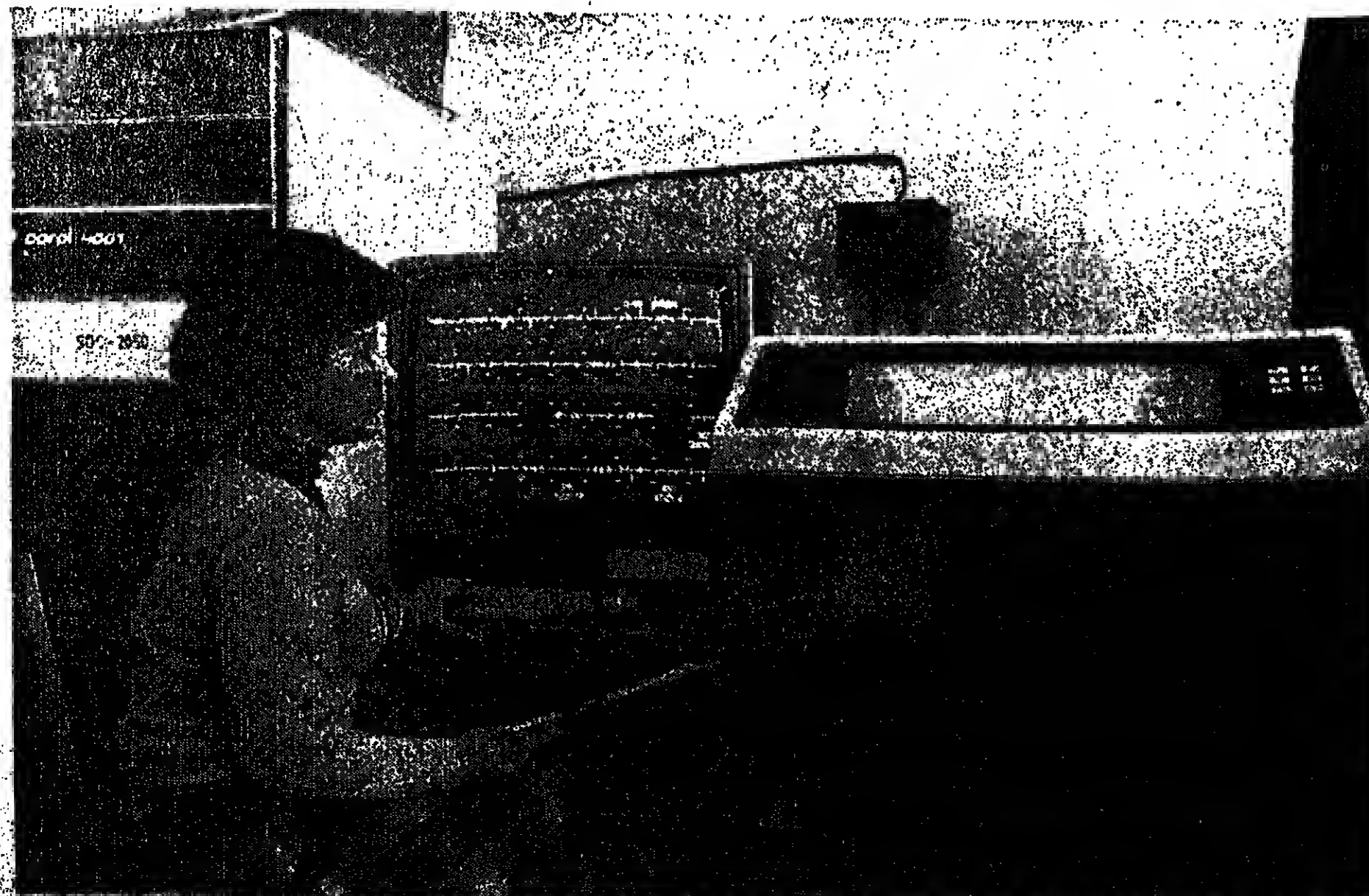
— Computer technology equipment such as: medium-capacity computers, minicomputers, microcomputers, personal computers, graphical systems, invoicing and bookkeeping machines, peripheral equipment. These products are exported to People's China, Czechoslovakia, the USSR, the GDR, Switzerland, Austria, West Germany, the USA.

The electronic components cover a wide range of diodes, transistors, integrated circuits, resistors, condensers, etc and are exported to Bulgaria, Czechoslovakia, the GDR, Poland, France, Italy, the United States etc.

Consumer goods such as radio receivers, radio cassette recorders and tv sets. These products are exported to countries such as West Germany, Britain, the Netherlands, Czechoslovakia, the GDR, the United States.

Also taking place through ICE ELECTRONUM are the export of licences and knowhow, the granting of technical assistance and software.

ELECTRONUM
BUCHAREST - ROMANIA



ICE ELECTRONUM imports a series of equipment, apparatuses, electronic components and various materials for the electronic industry and audio-video consumer goods.

An important partner in the export and import conducted by ICE ELECTRONUM is the Soviet Union.

ICE ELECTRONUM — Bucharest collaborates with the Soviet enterprises V/O ELECTRONORGTEHNICA, V/O STANKOIMPORT, V/O MASHPRIBORINTORG, V/O TECHMASHEXPORT.

ENERGOMASHEXPORT, V/O TEHNPOINTORG, V/O

Supplied to the USSR are adjustable drives for machine tools, automatic telephone exchanges, computer technology, while that country exports to Romania electronic components, technological equip-

ment for the electronic industry, computer technology and audio-video consumer goods.

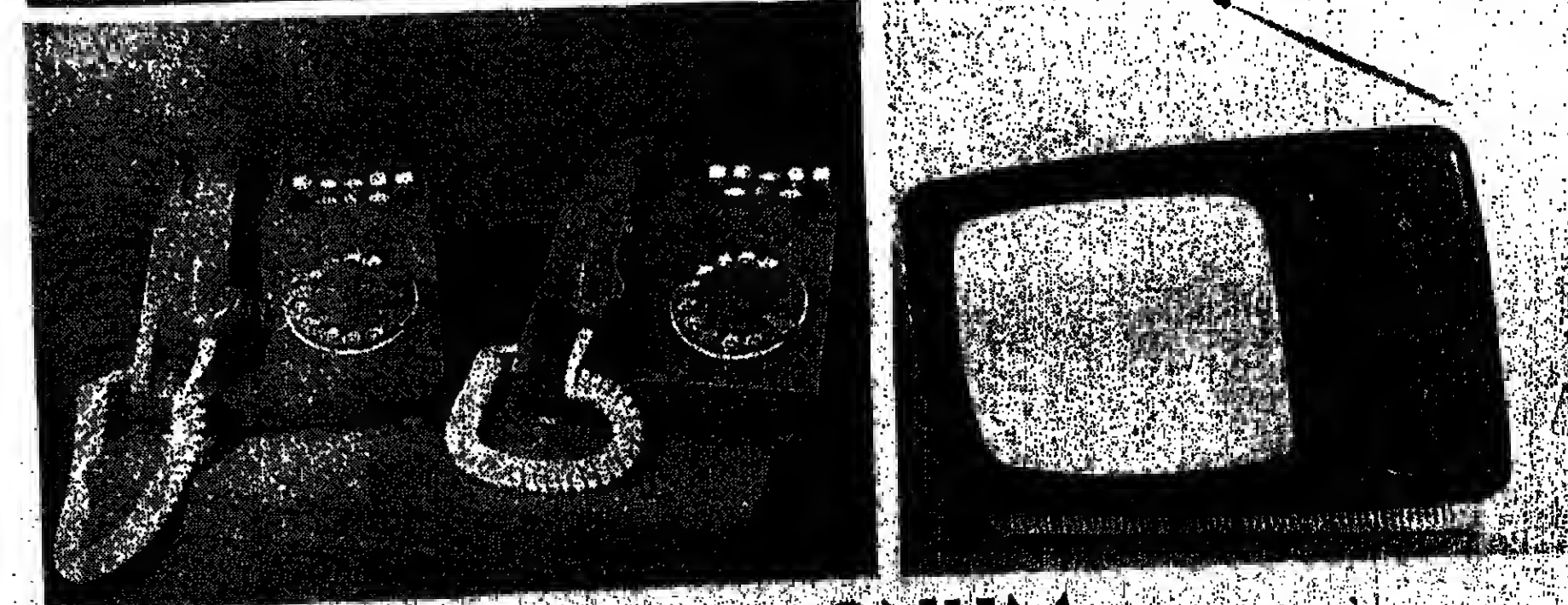
The collaboration with the Soviet foreign trade enterprises also accounts for the cooperation in production, that is Soviet electronic components are used in manufacturing electrical drives, computer technology equipment and automated telephone exchanges to be delivered to the USSR. At the same time very important is the ab-

servance of all delivery dates, especially as concerns the electronic components which are vital to the rhythmical realization of the equipment production plan.

According to annual mutual exchange protocol stipulations, the volume of the exchanges between ELECTRONUM and the Soviet foreign trade enterprises is set to grow every year.

For further information please contact our specialists.

ELECTRONUM
BUCHAREST - ROMANIA



ELECTRONUM
FOREIGN TRADE COMPANY
BUCHAREST • ROMANIA

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MINOLTA GREETSS ROMANIA

MINOLTA's philosophy is to view copiers and the technical assistance granted to end users as a whole. It is easy to expect the most of the inventiveness of the products of a big producer, but the fact that a customer takes it for granted that he benefits by the best technical assistance means much more to MINOLTA. This is the reason why copiers, laser printers, telefax and text systems come ever more frequently from MINOLTA.



from design to the industrial capitalization of the product, since a first capitalization (through the faculty's pilot microproduction unit) is fully controlled and guided by the authors of the product — students and professors.

Crossing this stage, the inventor delivers to the large industry not only a solution conceived by him but also an experimental prototype or sometimes a mass-produced item based on a new line, together with the manufacturing technology, itself monitored in the school's microproduction unit.

Romanian scientist Henri Coandă liked to repeat, whenever he was surrounded by young people, in order to spur them towards the art of creation: "Let us not admire completed things, but the human brain at work." Is this not the invention technology proper?

In fact, invention science has exceeded the university realm. This year, last, hosted the third edition of the postgraduate school of invention science, an institution improving the technical-scientific training of on-

study. As far as the diploma is concerned, it is issued only after the student receives an invention characteristic from the State Office for Inventions and Trademarks. What are the fruits of this practice? Until the last edition, some 600-800 engineers, technological engineers, foremen, workers had graduated from the invention science school to test. They will be followed by this year's 150-strong class.

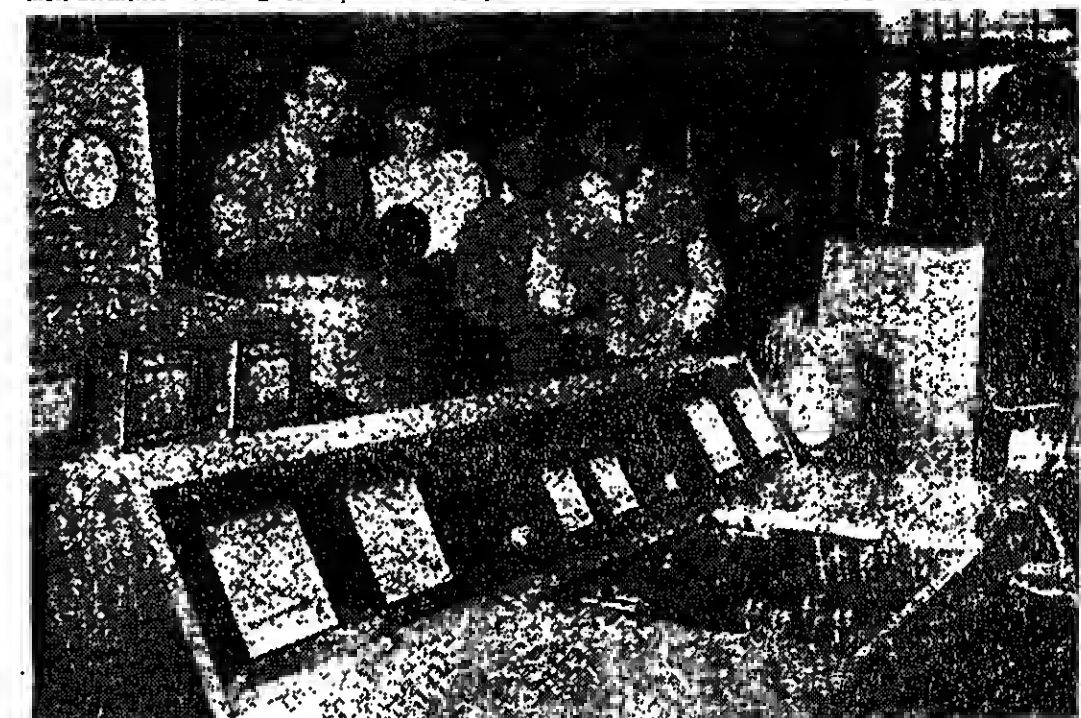
A SKETCH FOR A DIDACTICS OF THE FUTURE

Another dimension of value engineering is provided by the DISROM research-design-production team working at the Polytechnic Institute in Bucharest. The team is headed by assistant professor Aurel Bră-

rescu. They replace them with others. We remodel the set of elements in keeping with the new requirements. And here is a spectacular detail: while the achievement of a conventional device of average complexity takes some 200-250 hours of work (over one month), remodeling the set of devices according to the SEFA-DISROM (Aurel Brărescu) conception requires between six and eight hours (therefore only a day, or less, of work).

Adding to these advantages are other, equally important ones: 75 per cent material economy, energy savings, etc.

In conclusion, here are two elements which have become classic: 1975 — the birth of the DISROM team which included the technical personnel, professors and very many students; 1980 — the creation of the first Romanian set of modular elements, a rare performance at the time, when just a few great industrial powers (the Soviet Union, West Germany, Great Britain) could afford to manufacture sets of modular elements.



gineers, technicians and workers. Just as at the previous editions, the participants in the event — held under the aegis of the Invention Science Commission of the Romanian Academy — benefitted by the assistance of reputed scientists, researchers and experts in the numerous branches of invention science, as well as by the labs or specialized integration units of the Polytechnic Institute in fact.

In keeping with the students' training, flexibility, their immediate and future technical concerns, the invention school lays down various study themes. This year, for instance, six specialized sections were set up, coordinated by test-based professors: construction, electro-electrical engineering, industrial chemistry, textiles, biomedicine, mechanics. The curriculum included such subjects as the "Psychopedagogical and Educational Bases of Invention Science, Techniques of Creation", "The Cortex, the Seat of Creation, Thinking", "The Psychosocial Bases of Technical Creation", "The Techniques of Drafting Invention Descriptions", "Modeling, Experimentation, Improvement with a View to Technical Creation", "Logical Methods and Techniques of Creation".

What happens after graduation? Can one speak of a certification of the students' as inventors?

"The courses are attended by whoever pleases, but only those who can become inventors", said professor Belescu.

In other words, those attending the courses do not automatically become inventors. They must earn this title in future. At the conclusion of the course, certificates and the grade "obtained" each participant receives a Technical theme which he must solve in a creative way. It's a theme proposed by the organizers, whose the student is working on by the school's leadership. The term is one year. Over this period, both the school and the Invention Science Commission of the Romanian Academy provide, on request, technical-scientific advice regarding the theme under

study, D.Sc.

What are the pursuits of this team? Experts knew that before an object is mass produced, special tools, devices and verifiers must first be created. But when the series is completed and the object of fabrication is changed, the installations become useless and others must be built.

Taking into consideration this piling up of tools and devices, Aurel Brărescu has created a series of basic elements from which the devices necessary for production are reconstructed. In this way, several elements make up a device and the totality of elements from which thousands of devices can be built make up a set.

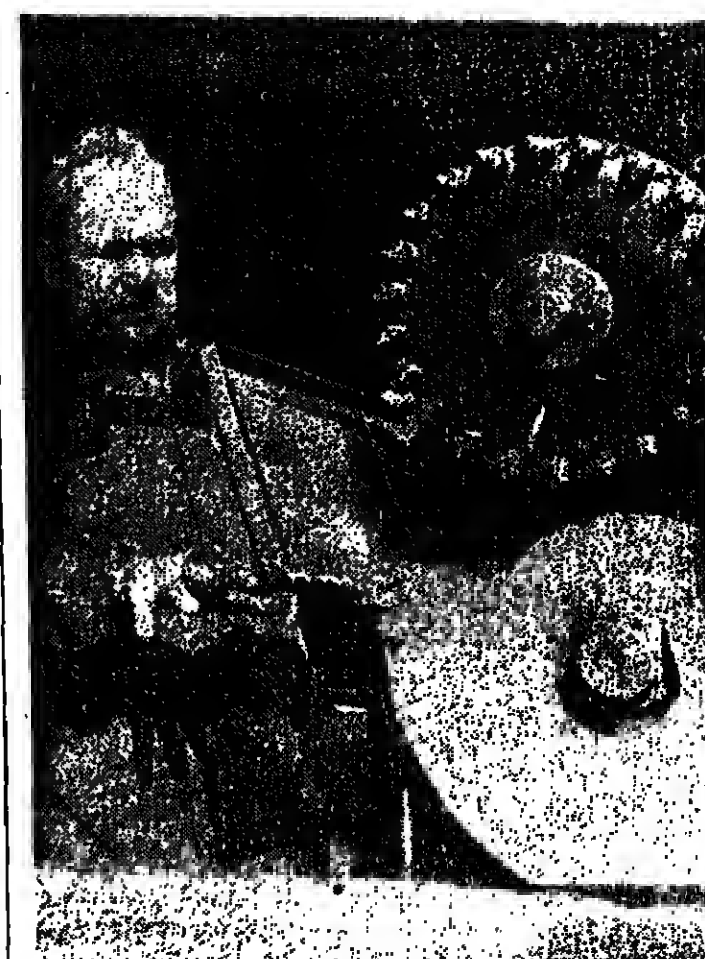
This means a small plant, a pecked factory whose efficiency is unimaginable. All these devices can be built, according to one's needs, in hundreds and thousands of variants.

In the production of a certain item, stopped at a given moment? We no longer throw away the devices in order to

ONE DAY FOR A MONTH'S WORK

The insistent demands of the large industry allowed DISROM to grow into a true national network, with branches in Bucharest, Cluj-Napoca, Satu Mare, etc. Within the first symposium of invention science held in fact in 1984, associate pro-

Photos: Professor Belescu (top right) and his students turning to account their ideas in the faculty labs or in collaboration with enterprises both in fact and other towns.



fessor Aurel Brărescu set from the methodological concept SITCPS (system of collective utilization of scientific experience concentrated). The concept can be applied in very diverse fields: forming machinery design, layout and dynamic film drying kilns, processing for vegetable seed selection, structures, etc. Several other fields expect spectacular solutions through the use of the new methodology.

Yet the most important merit of DISROM is a new school of value engineering training future experts in the spirit of a new and modern research science.

This implies firm principles of thinking, a logical movement of thinking information synthesis) founded by a general science of design.

In keeping with the new methodology, an interesting test was conducted: Students with peer grades were given subjects for diploma papers. They were recommended to apply strictly the new methodology. Surprisingly, unexpected solutions were produced!

The respective methodology can be described as a general science of manufacturing without any manufacturing object. Within this process of elaboration elements of logic of thinking, of logic of creative action appeared. A new didactics — called GIAC (inventive thinking and creative action) was born.

The new GIAC didactics represents the highest level in the evolution of the system of integrating higher education with research and production, favoring, above all, interdisciplinary collaboration, the joint research teams made up of experts from various faculties.

The invention science born in fact and the new methodology of Bucharest, together with the GIAC didactics have paved the way towards a new reference system, towards a new scientific methodology without which value engineering cannot exist.

At present and even more so in the future, industry demands complex products which cannot be prepared but through work in interdisciplinary research teams. In order to reach high performance within these teams, one must think and create differently than at: a new logic of thinking, a new specialized language, a new design.

Maybe even more than the spectacular performance obtained in industry, one should value another aspect born from the application of these new research methodologies: their theoretical and practical scope opens the succeeding generations of experts for the battle with the far-from-easy exigencies and socio-economic demands of the future, forcing them to align themselves, as early as the first years of higher studies, with the rigours of an anticipatory and flexible education, with a new wave of studying permanently sharpening their intelligence.

A bank of ideas is highly important for ensuring technological and scientific progress. It is not accidental that Academician Octav Onicescu, a great mathematician of the Romanian school of mathematics, used to tell young people around him, students and experts: "Who creates has, who does not create does not exist".

CONSTANTIN LUPU



ROMANIA IN THE WORLD • ROMANIA IN THE WORLD

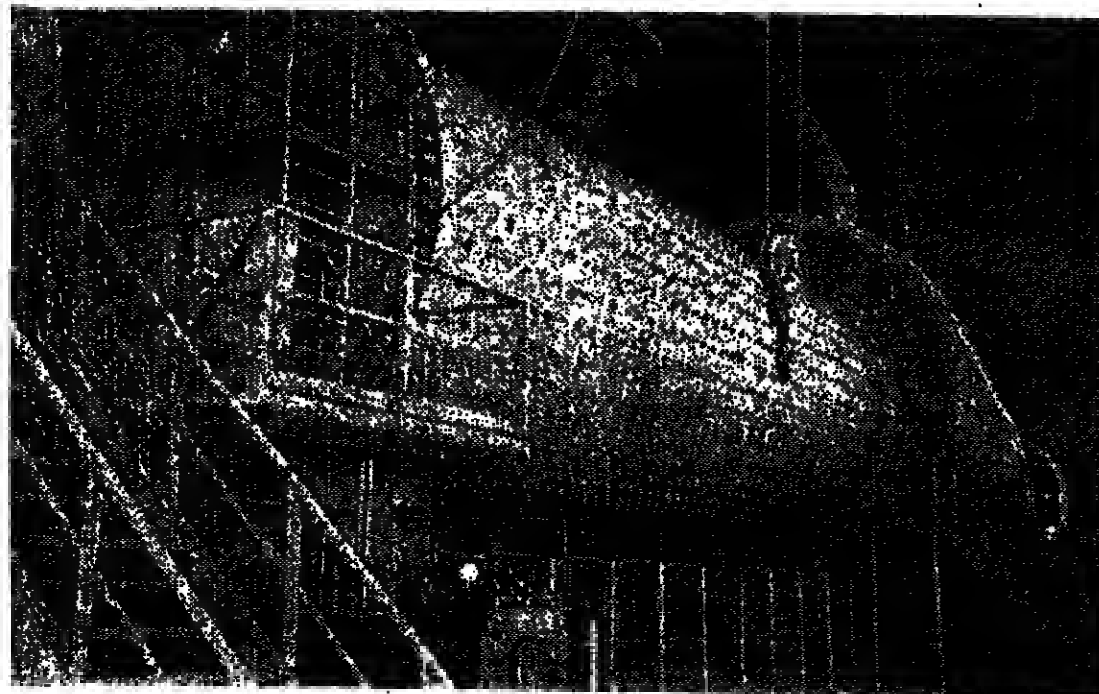
ROMANIAN BUILDERS

For over two decades now, Romanians consistently practice enterprises specializing in various fields have been required to work in numerous countries. Over this period, the range of activities just as the array of countries of focus have grown. Users has been continuously enlarged, as nn evidence of the high qualitative level boasted by the works performed, said engineer Ion Miliutaru, Deputy Minister and head of the Department for Overseas Construction, Industrial, urban development, housing, socio-cultural and agro-silvicultural constructions, land improvement and power training work. Over 20 million dollars has been carried on by both the Department's own units — the Roma-

Turkey, Iran, Yugoslavia, Syria), cement factories and woodworking plants (in Iraq, Egypt, Pakistan, China, Yugoslavia, the DFE of Korea, etc., and in Nigeria, the Central-African Republic, Iran, Sri Lanka, respectively). With the aid of these economic projects as well as social, cultural and sports ones in such countries as the DFE of Korea, Iraq, Syria, Egypt, Czechoslovakia, Austria, Greece, the Arab World, Iran, Mongolia, Sudan, Libya, etc.

Thousands upon thousands of Romanian constructors are currently working abroad, materializing a suite of cooperation contracts concluded recently. Together with the military cooperation, economic ties are the important foundations of this

kled are translated into facts with partners in the USSR and they concern the participation in the construction of economic units such as the mining works enriching the acid iron ores at Krivoy Rog and the natural gas processing complex at Sovetsk. Several other cooperation contracts with partners in Egypt, Iraq, Libya are under way, some of them being in an advanced stage of completion. The third stage of the Department for Overseas Construction is adding that in the current quinquennium (1968-1970) the amount of works carried out by Romanian contractors abroad will be 2.5 times larger than in the previous interval.



ship Construction and Erection Company — ARCOM, the Romanian Enterprise for Overseas Land Reclamation — ARCTIC, the Study and Design Control for Overseas Construction — ELECTRO, RECT, and other foreign trade enterprise specializing in construction in the fields of road, rail; water and air transportation (CONTRAN-SPORT); GEOTECH, the geotechnical and geophysical engineering and mining drilling (ROMPETROL-GEOMIN), etc., whose activity is coordinated by the Department.

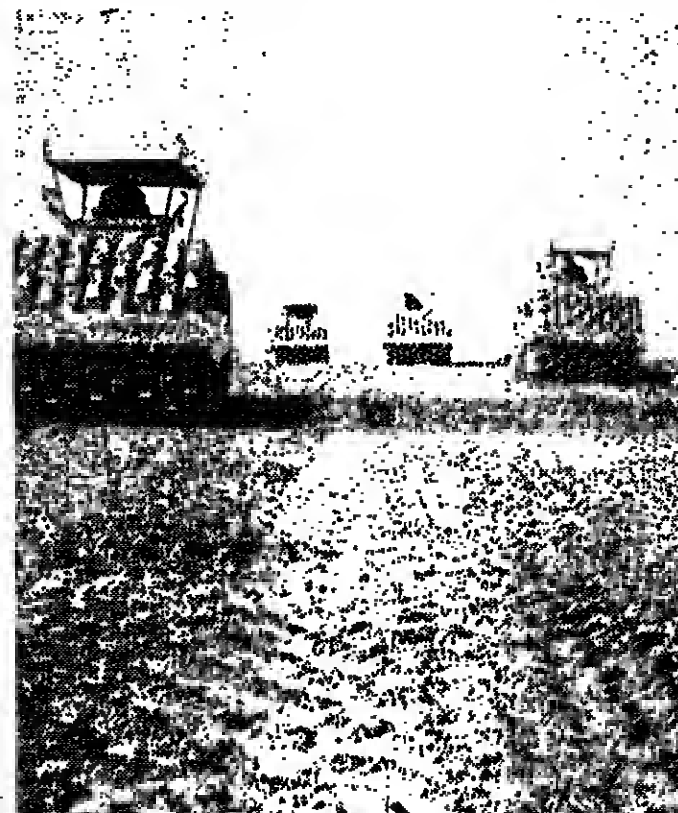
Over this interval, Romanian constructors have completed or are still engaged in some 150 joint ventures in over 60 of the world's countries. In the countries where they are developing, our colleagues went on, adding that the total amount of works conducted by Romanian constructors, a breadth of 100,000 sq. km. and a depth of 40 times, in comparison with the firms in the West, are comparable. Romanian constructors proceed: oil refineries (in India, Iran, Iraq, etc.), steel plants (in Iran, etc.), power plants (in Iran, etc.), chemical plants (in Iran, etc.), and other enterprises.



ARCIF — COOPERATION

The **Rommanian Enterprise for Overseas Land Reclamation — ARCF** specializes in irrigation, desalting, drainage, damming, water logging, soil erosion, control, water supply, sewerage, hydroelectrical works, agrozeotechnical buildings, etc. To this end, ARCF cooperates with Rommanian research, study and design institutes such as ROMPROIECT (Study and Design Centre for Overseas Construction), ISPIF (Study and Design Centre for Land Reclamation Works), ICITIR (Institute of Research and Technology for Irrigation, Drainage and Bralnage).

Of ARCF's recent achievements are: the **Al-Jazeera** and **Al-Natolia** complex land molleration and irrigation works over 300,000 hectares in area at **Alaska** (Syria) and over 35,000 ha at **Alilla Kiri** (Iraq); the **Saddam** project for irrigation in Iraq, comprising land molleration works over an area of 14,000 ha, at **Kirkuk**; the **axo-outlet**, in the same place, of a 33-km branch drain and a 21-km main drain; the working out of studies and designs for land molleration works in the **Al-Basra** and **Al-Hakkari** river basins and for fish farms in Iraq; the execution of the drillings for water supply in **Zambia**, the DPR of **Yemen** and **Libya**; the delivery of hydrological and hydraulic studies and designs in **Syria**, **Iraq**, **S.A.C.**



Offset works for irrigation canals in Syria. Top left: block
slab built in Algeria. Left: a cement factory raised in Ir
Bottom: rolling stock repairing workshop in Egypt.

THE TROPHIES OF QUALITY

ARCOM is a Romanian foreign trade enterprise well known abroad and collored to execute mounting-erection-installation works at complex industrial or civil projects. An international contractor acknowledged in many European, Asian and African countries owing to the high quality of works executed. ARCOM holds important distinctions: "The International Promellen Prize" granted (1973) by the International Promellen and Freddie Institute of

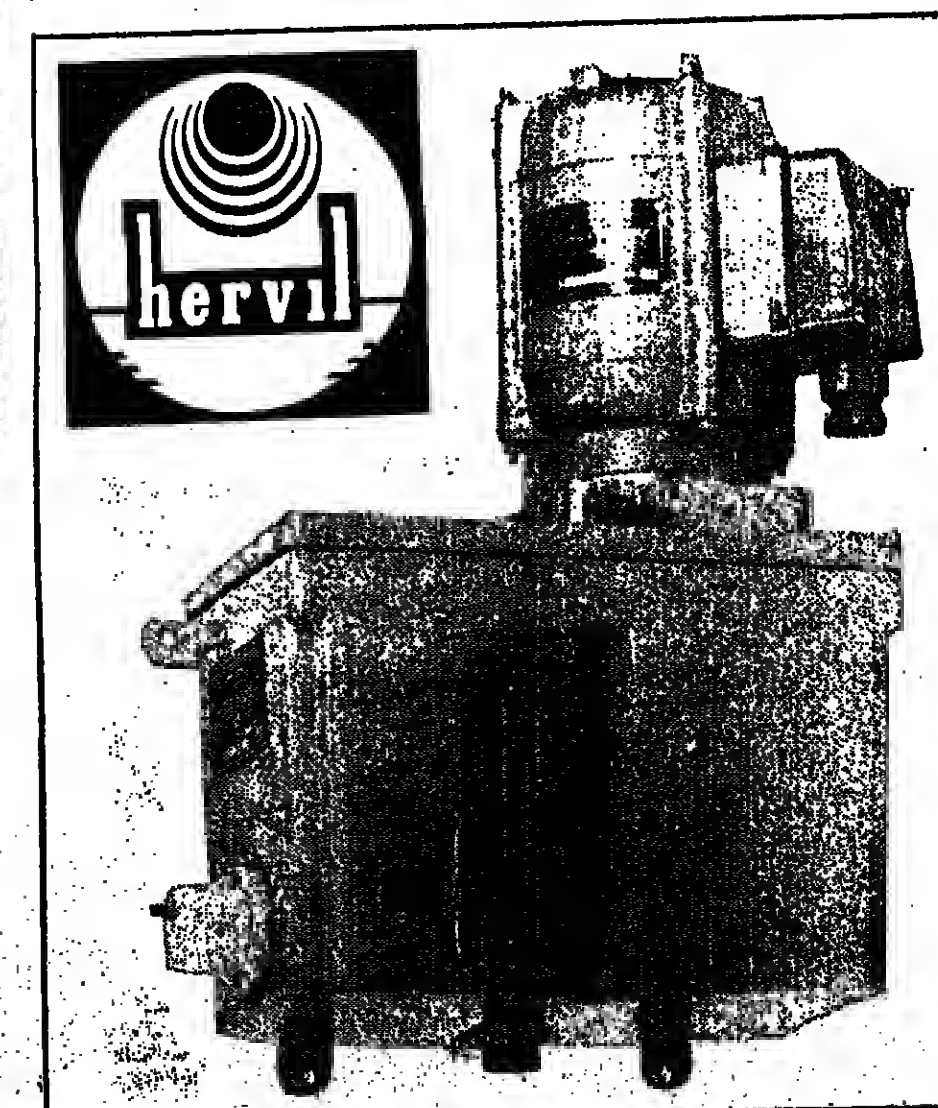
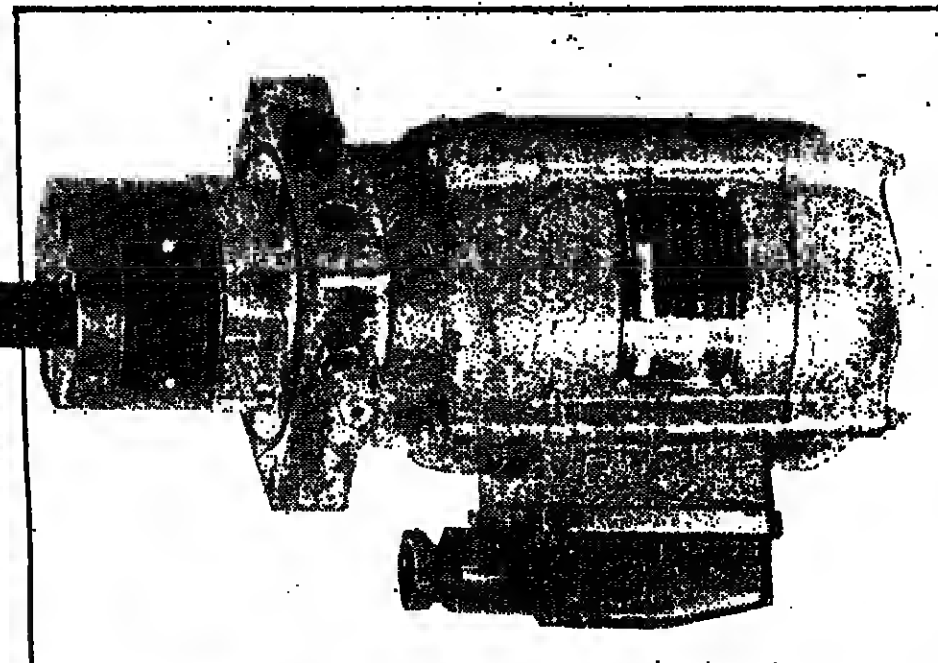
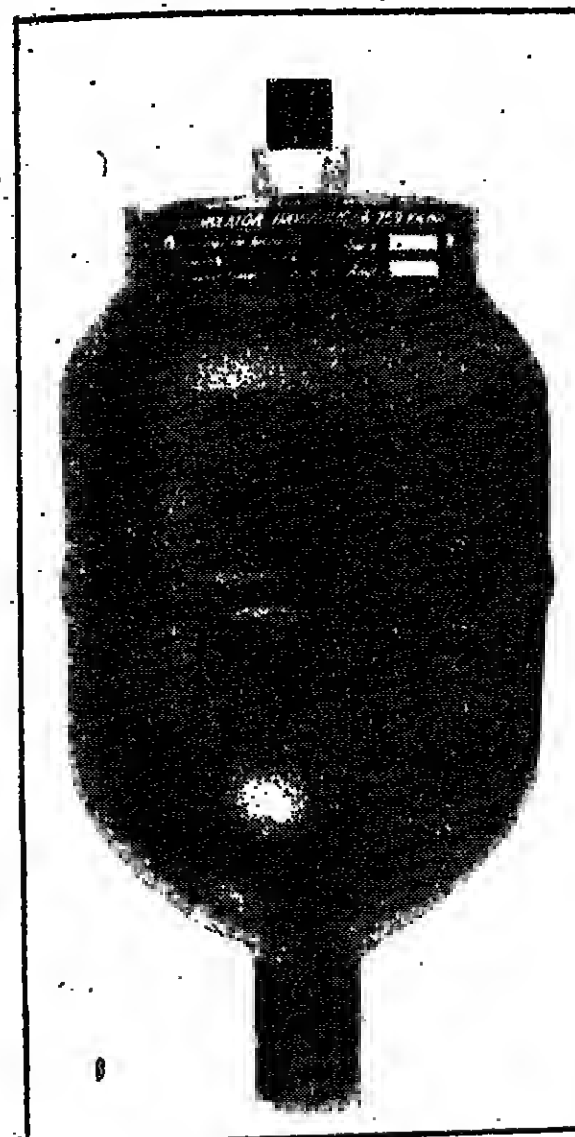
Geneva, the "Trophy for Quality" and the "Trophy for Export" granted by the British Office Jury in Madrid (1878).

The range of services offered by ARCOM is very complete including construction-mechanical works for industrial plants in all branches, civil construction of all kinds, as well as a wide range of engineering services (licences, studies, designs, construction technologies, feasibility studies and expert appraisals, etc.).

[illegible]

THE HYDRAULIC EQUIPMENT ENTERPRISE

IN RIMNICU VILCEA — ROMANIA MANUFACTURES A WIDE RANGE OF PRODUCTS AS FOLLOWS:



- **ELECTROHYDRAULIC SERVOVALVES**
 - **DIRECTIONAL CONTROL HYDRAULIC EQUIPMENT**
 - valves
 - directional valves
 - controllers
 - regulating valves
 - needle valves
 - **HYDRAULIC EQUIPMENT FOR CLAMPING SEMI-FINISHED PRODUCTS ON MACHINE TOOLS :**
 - work supports
 - swing clamps
 - minor cylinders
 - collet chucks
 - high pressure hand pumps
 - vices
 - pumping systems
 - **FILTERING EQUIPMENT :**
 - suction filters
 - pressure filters
 - return filters
 - **PNEUMOHYDRAULIC ACCUMULATORS AND ACCESSORIES**
 - **HYDRAULIC CYLINDERS**
 - **HYDRAULIC PUMPS**
 - **LUBRICATING EQUIPMENT :**
 - progressive lubricators
 - volume lubricators
 - oil lubricating devices
 - grease lubricating devices
 - two-way lubricating devices
 - resistances
 - injectors
 - safety and non-return valves
 - **VARIOUS HYDRAULIC EQUIPMENT**
- The Hydraulic Equipment Enterprise in Rimnicu Vilcea offers technical assistance for the products ordered upon request.
- Moreover, it can design new products, in keeping with the end users' needs.

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